

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MASAO SATO

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Appeal No. 97-0169  
Application No. 08/194,369<sup>1</sup>

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ON BRIEF

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Before THOMAS, SMITH, and DIXON, Administrative Patent Judges.  
DIXON, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the Examiner's final rejection of claims 1 to 5, which are all of the claims pending in this application.

We REVERSE.

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<sup>1</sup> Application for patent filed February 9, 1994.

### BACKGROUND

The appellant's invention relates to an X-ray fluorescence coating thickness gauge which measures the thickness of metal coatings applied to electronic components, etc. The invention measures the thickness of any one of a variety of different samples without requiring preliminary manual inputting of identification information for the particular sample being measured. The invention uses a plurality of stored calibration curves, each one representing a relationship between coating thickness and X-ray fluorescence intensity for a respective reference sample having known constituents and a known coating thickness. An understanding of the invention can be derived from a reading of exemplary claim 1, which appears below.

1. An X-ray fluorescence coating thickness gauge comprising:  
  
memory means for storing a plurality of calibration curves, each curve representing a relation between coating thickness and X-ray fluorescence intensity for a respective reference sample having known constituents and coating thickness; means for irradiating a test sample with a primary X-ray beam collimated by a collimator; means for detecting X-ray fluorescence generated from the test sample in response to irradiation by the primary X-ray beam; a differentiating circuit for performing differential manipulation of the X-ray fluorescence spectrum of the test sample based on the X-ray fluorescence detected by said means for detecting and providing an output dependent on constituents of the test sample; automatic identification means coupled to said differentiating circuit for automatically identifying constituents of the test sample based on the output from said differentiating circuit; automatic selecting means coupled to said automatic identification means and to said memory means for selecting from the stored calibration curves the calibration curve associated with constituents which correspond most closely to the constituents identified by said automatic identification means by comparing the constituents identified  
  
by said automatic identification means with constituents associated with each of the calibration curves; and means coupled to said automatic selecting means for

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measuring the coating thickness of the test sample using the selected calibration curve.

The prior art reference of record relied upon by the Examiner in rejecting the appealed claims is:

Parobek	4,959,848	Sep. 25, 1990
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Claims 1-5 stand rejected under 35 U.S.C. § 103 as being unpatentable over Parobek.

Rather than reiterate the conflicting viewpoints advanced by the Examiner and the appellant regarding the above-noted rejections, we make reference to the Examiner's answer (Paper No. 14, mailed July 19, 1996) for the Examiner's complete reasoning in support of the rejections, and to the appellant's brief (Paper No. 13, filed May 7, 1996) for the appellant's arguments thereagainst.

### **OPINION**

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art reference, and to the respective positions articulated by the appellant and the Examiner. As a consequence of our review, we make the determinations which follow.

Appellant argues that

[t]he basic shortcoming of the applied reference [Parobek] is that it does not disclose or suggest a system which is capable of [automatically] identifying the components of a test sample and then automatically using that identification to select a calibration curve, which is then used to generate an indication of the thickness of a coating on the same test sample. While the reference system measures both the weight percentage of an element in a coating and the thickness of the coating, it does not use the first measurement to produce the second measurement. (See brief at page 4.)

We agree with appellant that the Parobek reference is lacking the claim 1 automatic identification and use thereof to automatically select a calibration curve from stored curves and measuring the coating thickness of the test sample using the selected calibration curve.

As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." **In re Hiniker Co.**, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998).

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of presenting a ***prima facie*** case of obviousness. **See In re Rijckaert**, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A ***prima facie*** case of obviousness is established by presenting evidence that the reference teachings would appear to be sufficient for one of ordinary skill in the relevant art having the references before him to make the proposed combination or other modification. **See In re Lintner**, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972). Furthermore, the conclusion that the claimed

subject matter is ***prima facie*** obvious must be supported by evidence, as shown by some objective teaching in the prior art or by knowledge generally available to one of ordinary skill in the art that would have led that individual to combine the relevant teachings of the references to arrive at the claimed invention. **See In re Fine**, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

After a careful review of the record in this case, we are compelled to agree with appellant that the Examiner's conclusion of obviousness is not supported by the types of factual findings necessary to reach this conclusion. Our reading of the Examiner's reasons for the determination of obviousness causes us to conclude that the Examiner merely believes the claimed invention to be obvious because it seems that it would have been obvious. Although we agree with the Examiner that it may have been obvious to have different reference or calibration curves for varied samples, the Examiner has not provided a teaching in Parobek or a line of reasoning as to why it would have been obvious to one of ordinary skill in the art at the time of the invention to have "pretested his reference samples and stored the calibration curves [in memory]." . (See answer at page 5.) The Examiner has not addressed the limitations set forth in

the language of the claim concerning the "automatic" analysis and use of these results to automatically retrieve the appropriate calibration data to measure the thickness. The prior

art teachings of Parobek merely teach the skilled artisan to use a single reference sample and reference curve. The Examiner has not pointed to any clear indication in Parobek that suggests the use of plural reference curves or the automatic processing of measured data. Nor has the Examiner cited a clear teaching of using a first value to determine the second value. (See answer at pages 6-7.)

The Examiner attacks the level of disclosure in appellant's specification and asserts that the storage and use of plural curves would have been "obvious and noninventive" and "elementary and obvious." (See answer at pages 6-7.) We disagree with the Examiner's assertions. The burden of presenting a ***prima facie*** case is upon the Examiner. Appellant has clearly shown that the Parobek reference is lacking certain elements and features recited in claim 1. The Examiner acknowledges the deficiencies and merely makes a conclusion that skilled artisans would have been motivated to modify Parobek without providing any evidence or convincing line of reasoning to carry out these modifications. This does not give rise to the required presentation of a ***prima facie*** case of obviousness.

We have reviewed the portions of the Parobek reference cited by the Examiner and do not find that Parobek uses the determination of the constituent components to select a reference and use the selected reference to determine thickness.

The Federal Circuit recently discussed inherency and whether an aspect of a claimed invention would be necessary from the disclosure in **In re Robertson**, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). The Federal Circuit stated "[t]o establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.' " The Federal Circuit further stated "[i]nherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." **Id.** 169 F.3d at 745, 49 USPQ2d at 1951. From the factual evidence as stated by the Examiner in the answer, it would not be "necessary" yet it may have been obvious that the some or all of the functions would be carried out. The Examiner has not made this argument or provided any line of reasoning why it would have been obvious to one of ordinary skill in the art at the time of the invention to have plural calibration or reference curves stored in memory and have the

measurement device automatically determine the constituent components, use that determination to automatically determine the most appropriate calibration or reference

curve and use the selected curve to determine the thickness as set forth in the language of claim 1.

The Examiner asserts that appellant's argument on page 6 of the brief concerning Parobek using only a single calibration sample is "absurd and is unsupported by evidence or logic." (See answers at page 5.) The Examiner states that "Parobek has explained that the composition of the calibration sample must match that of the test sample, which requires that there must be as many different calibration compositions as there are test compositions. This is precisely why the Parobek device comprises means for measuring composition before measuring thickness." (See answer at page 5.) The Examiner does not cite to any portion of Parobek to support this conclusion or asserted suggestion. Our review of the teachings of Parobek shows that there is no suggestion for the use of plural curves. Parobek states that:

It is still another object of the present invention to provide an apparatus which utilizes a built-in calibration sample to enhance accuracy, precision and consistency of the measurements provided by the apparatus. . . .

The test results from an unknown sample are compared to test results from a calibrated known sample to provide quantitative results. . . .

It is an advantage of the present invention that it provides an apparatus which simultaneously measures both thin film thickness and concentration of selected elements therein. (Emphasis added.) (See col. 1, line 50 - col. 2, line 14.)



Clearly, Parobek does not teach or suggest the use of plural stored calibration curves and the automatic measurement with the use of the stored data. Parobek further states that:

A calibrated sample 94 (shown in phantom in FIG. 1) is demonstrably engaged to the sample holder 44 proximate the test sample 42. The sample holder 44 is disposed to move relative to the window 40 to permit exposure of the calibrated sample 94 to the X-ray source. The calibrated sample 94 is utilized to provide quantitative results regarding the thickness of the thin film and the concentration of a selected element within the film. Results from the calibrated sample, having a known thin film thickness within the range of the test sample, and a known concentration of the selected element, within the range of the test sample, are compared with the test sample results to provide quantitative information. The ease of access of the operator to the calibrated sample greatly facilitates the frequent calibration of the device, whereby the accuracy, precision and consistency of results is [are] enhanced. (Emphasis added.) (See col. 4, line 55 - col. 5, line 3.)

Clearly, Parobek only envisions the use of a single calibration curve and the use of that same curve on the samples to be measured. Therefore, we will not sustain the rejection of independent claim 1 nor the rejection of dependent claims 2-5.

## **CONCLUSION**

To summarize, the decision of the Examiner to reject claims 1 to 5 under 35 U.S.C. § 103 is reversed.

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**REVERSED**

JAMES D. THOMAS  
Administrative Patent Judge

JERRY SMITH  
Administrative Patent Judge

JOSEPH L. DIXON  
Administrative Patent Judge

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